CLAIMS

1. (Currently amended) A method for the manufacture of a printed electric circuit having at least one electronic component selected from the group consisting of conductor, resistor, capacitor and inductor, the method comprising:

(a) ink jet printing on a substrate having at least one layer, and wherein the substrate is glass, at least one patterned layer of an ink jet printable composition comprising:

(1) functional material wherein the functional material comprises one or more substances selected from the group consisting of elements, compounds and mixtures thereof having electrical properties, wherein the functional material is spherical, and wherein the functional material is coated with a fatty acid,

(2) organic polymer comprising polyvinylpyrrolidone; wherein the polyvinylpyrrolidone is an organic polymer for dispersing the functional materials; dispersed in

(3) dispersion vehicle selected from organic solvent, water, or mixtures thereof;

and wherein the viscosity of said composition is between 5 mPa.s to 50 mPa.s at a temperature of 25°C to 35°C,

(b) firing said substrate and ink composition of (a) using a 3 hour heating profile with a 10 min. peak at 380 degrees C..

2. (Cancelled)

3. (Previously Presented) The method of Claim 1 wherein the viscosity is less than 20 mPas.s at room temperature.

4. (Previously Presented) The method of Claim 1 wherein the composition of Claim 1(a) having a stability of up to 24 hours.

5. (Previously Presented) The method of Claim 1 wherein the functional materials are selected from the group of conductive functional

materials consisting of: gold, silver, copper, nickel, aluminum, platinum, palladium, molybdenum, tungsten, tantalum, tin, indium, lanthanum, gadolinium, ruthenium, cobalt, titanium, yttrium, europium, gallium, zinc, magnesium, barium, cerium, strontium, lead, antimony, and mixtures thereof.

6. (Previously Presented) The method of Claim 1 wherein the functional materials are selected from the dielectric functional materials selected from Barium Titanate and Titanium Dioxide, Pd/Ag and RuO_2.

7. (Previously Presented) The method of claim 1 wherein the surface of the substrate is treated to change surface tension.

8. (Previously Presented) The method of claim 7 wherein the treated substrate has a surface tension range between 15 dyn/cm - 100 dyn/cm.

9. (Previously Presented) The method of claim 7 wherein the surface of the substrate is treated with surfactants.

10. (Previously Presented) The method of claim 1 wherein the ink jet printable composition further comprises UV-curable or thermally curable compounds.

11. (Previously Presented) The method of claim 10 wherein, after the ink jet printable composition leaves an ink jet printer nozzle during ink jet printing, the ink drops are exposed to UV-light

12. (Previously presented) The method of claim 10 wherein the concentration of the UV-curable compounds is 1-10wt%, based on the total weight of the conductor composition.

13. (Previously Presented) The method of claim 1 wherein the functional material has a particle size diameter of 0.1 microns - 1.2 microns.

14. (Previously Presented) The method of claim 13 wherein the functional material has a particle size diameter of 0.8 microns – 1.2 microns.

15. (Previously Presented) The method of claim 1 wherein the functional material has a particle size of 0.3 microns – 0.8 microns.

16. (Previously Presented) The method of claim 5 wherein the functional material is silver.

17. (Previously Presented) The method of claim 1 wherein lines are patterned, and wherein the lines, upon firing, have a width of 100 microns - 165 microns.

18. (Previously Presented) The method of claim 1 wherein lines are patterned, and wherein the lines of the electric circuit, upon firing, have a thickness of 1.8 microns - 2.0 microns.

19. (Previously Presented) The method of claim 1 wherein lines are patterned, and wherein the resistivity of the ~~fired~~ lines of the electric circuit, upon firing, is 11.5 mohm/square at 5 micron thickness.

20. (Previously Presented) A method for the manufacture of a printed electric circuit having at least one electronic component selected from the group consisting of conductor, resistor, capacitor and inductor, the method comprising:

(a) ink jet printing on a substrate having at least one layer, and wherein the surface of the substrate is treated, at least one patterned layer of an ink jet printable composition comprising:

(1) functional material wherein the functional material comprises one or more substances selected from the group consisting of elements, compounds and mixtures thereof having electrical properties, wherein the functional material is spherical, and wherein the functional material is coated with a fatty acid,

(2) organic polymer comprising polyvinylpyrrolidone, wherein the polyvinylpyrrolidone is an organic polymer for dispersing the functional materials; dispersed in

(3) dispersion vehicle selected from organic solvent, water, or mixtures thereof;

and wherein, the viscosity of said composition is between 5 mPa.s to 50 mPa.s at a temperature of 25°C to 35°C,

(b) firing said substrate and ink composition of (a) <u>using a 3 hour heating profile with a 10 min. peak at 380 degrees C</u>.

21. (Previously Presented) The method of Claim 20 wherein the viscosity is less than 20 mPas.s at room temperature.

22. (Previously Presented) The composition of Claim 20 having a stability of up to 24 hours.

23. (Previously Presented) The method of Claim 20 wherein the functional materials are selected from the group of conductive functional materials consisting of: gold, silver, copper, nickel, aluminum, platinum, palladium, molybdenum, tungsten, tantalum, tin, indium, lanthanum, gadolinium, ruthenium, cobalt, titanium, yttrium, europium, gallium, zinc, magnesium, barium, cerium, strontium, lead, antimony, and mixtures thereof.

24. (Previously Presented) The method of Claim 20 wherein the functional materials are selected from the dielectric functional materials selected from Barium Titanate and Titanium Dioxide, Pd/Ag and RuO_2.

25. (Previously Presented) The method of claim 20 wherein the treatment of the surface of the substrate results in a change of surface tension.

26. (Previously Presented) The method of claim 20 wherein the substrate is glass, or ceramic.

27. (Previously Presented) The method of claim 25 wherein the treated substrate has a surface tension range between 15 dyn/cm - 100 dyn/cm.

28. (Previously Presented) The method of claim 24 wherein the surface of the substrate is treated with surfactants.

29. (Previously Presented) The method of claim 20 wherein the ink jet printable composition further comprises UV-curable or thermally curable compounds.

30. (Previously Presented) The method of claim 29 wherein, after the ink jet printable composition leaves an ink jet printer nozzle during ink jet printing, the ink drops are exposed to UV-light

31. (Previously Presented) The method of claim 29 wherein the concentration of the UV-curable compounds is 1-10wt%, based on the total weight of the conductor composition.

32. (Previously Presented) The method of claim 20 wherein the functional material has a particle size diameter of 0.1 - 1.2 microns.

33. (Previously Presented) The method of claim 20 wherein the functional material has a particle size diameter of 0.8 – 1.2 microns.

34. (Previously Presented) The method of claim 20 wherein the functional material has a particle size of 0.3 – 0.8 microns.

35. (Previously Presented) The method of claim 22 wherein the functional material is silver.

36. (Previously Presented) The method of claim 20 wherein lines are patterned, and wherein the lines, upon firing, have a width of 100-165 microns.

37. (Previously Presented) The method of claim 20 wherein lines are patterned, and wherein the lines of the electric circuit, upon firing, have a thickness of 1.8-2.0 microns.

38. (Previously Presented) The method of claim 20 wherein lines are patterned, and wherein the resistivity of the lines of the electric circuit, upon firing, is 11.5 mohm/square at 5 micron thickness.

39. (Previously Presented) The method of claim 1, wherein the polyvinylpyrrolidone is 2 wt% or greater based on the total weight of the ink jet printable composition.

40. (Currently amended) A method for the manufacture of a printed electric circuit having at least one electronic component selected from the group consisting of conductor, resistor, capacitor and inductor, the method comprising:

(a) ink jet printing on a substrate having at least one layer, and wherein the substrate is glass, at least one patterned layer of an ink jet printable composition comprising:

(1) functional material wherein the functional material comprises one or more substances selected from the group consisting of elements, compounds and mixtures thereof having electrical properties, wherein the functional material is spherical, and wherein the functional material is uncoated;

(2) organic polymer comprising polyvinylpyrrolidone, wherein the polyvinylpyrrolidone is an organic polymer for dispersing the functional materials; dispersed in

(3) dispersion vehicle selected from organic solvent, water, or mixtures thereof;

and wherein the viscosity of said composition is between 5 mPa.s to 50 mPa.s at a temperature of 25°C to 35°C,

(b) firing said substrate and ink composition of (a) using a 3 hour heating profile with a 10 min. peak at 380 degrees C..

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41. (Currently amended) A method for the manufacture of a printed electric circuit having at least one electronic component selected from the group consisting of conductor, resistor, capacitor and inductor, the method comprising:

(a) ink jet printing on a substrate having at least one layer, and wherein the surface of the substrate is treated with, at least one patterned layer of an ink jet printable composition comprising:

(1) functional material wherein the functional material comprises one or more substances selected from the group consisting of elements, compounds and mixtures thereof having electrical properties, and wherein the functional material is uncoated;

(2) organic polymer comprising polyvinylpyrrolidone, wherein the polyvinylpyrrolidone is an organic polymer for dispersing the functional materials; dispersed in

(3) dispersion vehicle selected from organic solvent, water, or mixtures thereof;

and wherein the viscosity of said composition is between 5 mPa.s to 50 mPa.s at a temperature of 25°C to 35°C,

(b) firing said substrate and ink composition of (a) using a 3 hour heating profile with a 10 min. peak at 380 degrees C.